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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,165	06/27/2003	Serge Julien Auguste Imhoff	DN2003076	7815

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THE GOODYEAR TIRE & RUBBER COMPANY
INTELLECTUAL PROPERTY DEPARTMENT 823
1144 EAST MARKET STREET
AKRON, OH 44316-0001

EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/609,165		IMHOFF ET AL.	
	Examiner		Art Unit	
	Justin R. Fischer		1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In light of applicant's arguments and the amendments to the claims, the rejections with Hergenrother have been removed. However, a new set of rejections with Boon (newly cited) are applicable as set forth below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 6-15, 17, 19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata (US 5,309,970, of record) and further in view of Boon (US 4,356,219, newly cited), Toyoda (US 4,963,613, of record), and Watanabe (WO 01/14461, of record). Kawabata discloses a runflat tire construction comprising a radial carcass structure 30 and at least one wedge insert 50,60 in each sidewall, wherein said carcass is formed of polyester reinforcing elements (Column 3, Lines 55-65). While Kawabata is silent as to treating the reinforcing elements, it is extremely well known to treat synthetic fiber reinforcing elements, such as polyester, in order to improve adhesion between said reinforcing elements and the surrounding rubber. In particular, Boon discloses such a method in which a cord, particularly polyester, is initially treated with an aqueous emulsion comprising a polyepoxide (aqueous emulsion of epoxy) and subsequently treated with an RFL coating (Column 1, Lines 45-55 and Column 3, Lines 60+). In this instance, Boon teaches that such a method provides a high degree of

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adhesion between the polyester reinforcing element and the surrounding rubber. One of ordinary skill in the art at the time of the invention would have found it obvious to practice the "treatment" method of Boon in the tire of Kawabata to achieve the above noted benefits.

In regards to the RFL coating, such a coating is extremely well known in a wide variety of industries. Boon suggests that it (RFL or resorcinol-formaldehyde latex) is commonly included as part of an aqueous latex, usually a butadiene/styrene/vinylpyridine terpolymer (Column 1, Lines 25-35). While the reference fails to expressly state that the rubber latex is formed as a combination of said butadiene/styrene/vinylpyridine terpolymer and the claimed copolymer, it is extremely well known to form the rubber latex as a combination of these materials, as shown for example by Toyoda (Column 1, Lines 35-38). Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to form the rubber latex in accordance to the limitations of the claimed invention.

It is further noted that applicant contends that the claimed method in which the polyepoxide is applied after the yarns are twisted into a cord distinguishes it from the prior art (in which it is applied prior to twisting) (Page 8, Lines 25+). In this instance, Boon teaches that the first and second coatings can be applied to either the yarns or the cord (Column 1, Lines 45-55).

With respect to the inclusion of a blocked isocyanate, said isocyanate represents an extremely well known and conventionally used additive in RFL coatings, as shown

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for example by Watanabe (Page 10, Lines 25-27). The reference expressly teaches that such an additive contributes to enhanced adhesive performance. Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to include a blocked isocyanate in the RFL coating of Boon.

Regarding claim 2, the carcass of Kawabata is formed of polyester reinforcing elements.

As to claim 3, PEN and PET represent the common and conventionally used forms of polyester in the tire industry- such a position was set forth by the examiner in the previous office action and remains unchallenged by applicant and as such, it is taken to be admitted prior art.

With respect to claim 4, Boon teaches a wide variety of polyepoxide compounds, including those formed by combining phenol novolac resins and halohydrins (Column 3, Lines 15-25). It is further noted that each of the additional methods are consistent with the well-known and conventional techniques of forming polyepoxides. Lastly, it is noted that the claims as currently drafted are product by process claims and it does not appear that this limitation (method of forming polyepoxide) results in a materially different tire construction- thus, the limitations are not seen to further limit the claimed tire article. This differs from the method limitations of the additional claims since the disclosure provides sufficient evidence that the claimed application technique (after forming a cord) results in a materially different article.

Regarding claims 6 and 7, Boon teaches that the above noted aqueous emulsion of epoxy can be formed with a spin finish oil to define a single aqueous emulsion

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(Column 2, Lines 10-20). The reference further teaches that (a) the aqueous emulsion of epoxy can have a solids content of about 10 to about 50 weight percent (Column 3, Lines 35-40) and (b) the ratio of spin finish oil to epoxy is about 1/15 to about 5/1 (Column 3, Lines 5-10). Thus, it is clearly evident that several of the embodiments described by Boon would have satisfied the claimed range of about 1 percent to about 5 percent, and more preferably about 1 percent about 3 percent. It is emphasized that the minimum amount of epoxy in the first aqueous emulsion is about 10 weight percent- upon being included with said spin finish oil to define an aqueous emulsion as set forth by Boon, the epoxy weight content would be expected to fall within the claimed range. It is further noted that applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed range.

As to claims 8 and 9, Watanabe recognizes a wide variety of well known blocked isocyanates (Page 8, Lines 17-24). As to the specific amount of this compound, one of ordinary skill in the art at the time of the invention would have found the broad range of the claimed invention to have been obvious- this compound represents an "additive" that is designed to improve adhesion and one of ordinary skill in the art at the time of the invention would have expected such a component to be included in a relatively small amount. Thus, absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to include the claimed blocked isocyanates.

With respect to claims 10-13, Boon teaches that the total amount of spin finish oil and epoxy together range between 0.9 and 2.0 weight percent based upon the cord

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(Column 3, Lines 10-15)- one of ordinary skill in the art at the time of the invention would have recognized such a range to suggest a polyepoxide content (epoxy content) or DPU between 0.3 and 0.7 weight percent. Furthermore, applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed amounts/weights.

Regarding claims 14 and 15, the method of Boon teaches that the epoxy resin can be applied before, or after treatment with the spin finish oil or activator (Column 2, Lines 5-10). Also, the reference specifically states that the spin finish oil is necessary for effective rubber to polyester adhesion. It is further noted that the claims as currently drafted are directed to a tire article and these method limitations are not seen to result in a materially different article. As such, they do not further limit the tire construction of the tire. The examples do not compare a cord in which the activator itself (not polyepoxide) was applied prior to and after forming the cord.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata, Boon, Toyoda, and Watanabe as applied in claim 1 above and further in view of Hayashi (US 5,162,437, of record). Regarding the polyepoxide compound, Boon is silent as to the method in which the compound is formed (derived). As noted above, Boon teaches the use of wide variety of polyepoxides, including the general class of glycidyl ethers. It is well recognized that such a compound (polyglycidyl ether) is commonly formed or derived from an ortho-cresol formaldehyde novolac resin, as shown for example by Hayashi (Column 2, Lines 7-10). Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would

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have found it obvious to use the well known and conventional technique of forming a polyepoxide.

5. Claims 1-4, 6-16, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen (US 6,338,374, newly cited) and further in view of Boon, Toyoda, and Watanabe. As depicted in Figure 8, Nguyen discloses a runflat tire construction having a sidewall insert, a fabric underlay 54' disposed between the carcass and the belt structure, and a fabric overlay 55 disposed between the belt structure and the tread. The reference further teaches that the overlays can be formed of polyester reinforcing elements (Column 9, Lines 20-30). While Nguyen is silent as to treating the reinforcing elements, it is extremely well known to treat synthetic fiber reinforcing elements, such as polyester, in order to improve adhesion between said reinforcing elements and the surrounding rubber. In particular, Boon discloses such a method in which a cord, particularly polyester, is initially treated with an aqueous emulsion comprising a polyepoxide (aqueous emulsion of epoxy) and subsequently treated with an RFL coating (Column 1, Lines 45-55 and Column 3, Lines 60+). In this instance, Boon teaches that such a method provides a high degree of adhesion between the polyester reinforcing element and the surrounding rubber. One of ordinary skill in the art at the time of the invention would have found it obvious to practice the "treatment" method of Boon in the tire of Nguyen to achieve the above noted benefits.

In regards to the RFL coating, such a coating is extremely well known in a wide variety of industries. Boon suggests that it (RFL or resorcinol-formaldehyde latex) is commonly included as part of an aqueous latex, usually a

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butadiene/styrene/vinylpyridine terpolymer (Column 1, Lines 25-35). While the reference fails to expressly state that the rubber latex is formed as a combination of said butadiene/styrene/vinylpyridine terpolymer and the claimed copolymer, it is extremely well known to form the rubber latex as a combination of these materials, as shown for example by Toyoda (Column 1, Lines 35-38). Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to form the rubber latex in accordance to the limitations of the claimed invention.

It is further noted that applicant contends that the claimed method in which the polyepoxide is applied after the yarns are twisted into a cord distinguishes it from the prior art (in which it is applied prior to twisting) (Page 8, Lines 25+). In this instance, Boon teaches that the first and second coatings can be applied to either the yarns or the cord (Column 1, Lines 45-55).

With respect to the inclusion of a blocked isocyanate, said isocyanate represents an extremely well known and conventionally used additive in RFL coatings, as shown for example by Watanabe (Page 10, Lines 25-27). The reference expressly teaches that such an additive contributes to enhanced adhesive performance. Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to include a blocked isocyanate in the RFL coating of Boon.

Regarding claim 2, the underlays of Nguyen are formed of polyester reinforcing elements.

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As to claim 3, PEN and PET represent the common and conventionally used forms of polyester in the tire industry- such a position was set forth by the examiner in the previous office action and remains unchallenged by applicant and as such, it is taken to be admitted prior art.

With respect to claim 4, Boon teaches a wide variety of polyepoxide compounds, including those formed by combining phenol novolac resins and halohydrins (Column 3, Lines 15-25). It is further noted that each of the additional methods are consistent with the well-known and conventional techniques of forming polyepoxides. Lastly, it is noted that the claims as currently drafted are product by process claims and it does not appear that this limitation (method of forming polyepoxide) results in a materially different tire construction- thus, the limitations are not seen to further limit the claimed tire article. This differs from the method limitations of the additional claims since the disclosure provides sufficient evidence that the claimed application technique (after forming a cord) results in a materially different article.

Regarding claims 6 and 7, Boon teaches that the above noted aqueous emulsion of epoxy can be formed with a spin finish oil to define a single aqueous emulsion (Column 2, Lines 10-20). The reference further teaches that (a) the aqueous emulsion of epoxy can have a solids content of about 10 to about 50 weight percent (Column 3, Lines 35-40) and (b) the ratio of spin finish oil to epoxy is about 1/15 to about 5/1 (Column 3, Lines 5-10). Thus, it is clearly evident that several of the embodiments described by Boon would have satisfied the claimed range of about 1 percent to about 5 percent, and more preferably about 1 percent about 3 percent. It is emphasized that the

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minimum amount of epoxy in the first aqueous emulsion is about 10 weight percent- upon being included with said spin finish oil to define an aqueous emulsion as set forth by Boon, the epoxy weight content would be expected to fall within the claimed range. It is further noted that applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed range.

As to claims 8 and 9, Watanabe recognizes a wide variety of well known blocked isocyanates (Page 8, Lines 17-24). As to the specific amount of this compound, one of ordinary skill in the art at the time of the invention would have found the broad range of the claimed invention to have been obvious- this compound represents an "additive" that is designed to improve adhesion and one of ordinary skill in the art at the time of the invention would have expected such a component to be included in a relatively small amount. Thus, absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to include the claimed blocked isocyanates.

With respect to claims 10-13, Boon teaches that the total amount of spin finish oil and epoxy together range between 0.9 and 2.0 weight percent based upon the cord (Column 3, Lines 10-15)- one of ordinary skill in the art at the time of the invention would have recognized such a range to suggest a polyepoxide content (epoxy content) or DPU between 0.3 and 0.7 weight percent. Furthermore, applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed amounts/weights.

Regarding claims 14 and 15, the method of Boon teaches that the epoxy resin can be applied before, or after treatment with the spin finish oil or activator (Column 2, Lines 5-10). Also, the reference specifically states that the spin finish oil is necessary for effective rubber to polyester adhesion. It is further noted that the claims as currently drafted are directed to a tire article and these method limitations are not seen to result in a materially different article. As such, they do not further limit the tire construction of the tire. The examples do not compare a cord in which the activator itself (not polyepoxide) was applied prior to and after forming the cord.

As to claims 16, 18, and 20, the tire construction of Nguyen includes a fabric underlay and a fabric overlay.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen, Boon, Toyoda, and Watanabe as applied in claim 1 above and further in view of Hayashi. Regarding the polyepoxide compound, Boon is silent as to the method in which the compound is formed (derived). As noted above, Boon teaches the use of wide variety of polyepoxides, including the general class of glycidyl ethers. It is well recognized that such a compound (polyglycidyl ether) is commonly formed or derived from an ortho-cresol formaldehyde novolac resin, as shown for example by Hayashi (Column 2, Lines 7-10). Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to use the well known and conventional technique of forming a polyepoxide.

Response to Arguments

7. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection. As noted above, the previous rejection with Hergenrother has been withdrawn in light of applicant's arguments and amendments to the claims. In particular, it appears that applicant is arguing that the term "aqueous emulsion" necessarily requires a water-based emulsion- the examiner agrees. The term "aqueous" has a broader meaning than "water-based" and includes substances that are "water-like" and "similar to water". However, in view of applicant's arguments and amendments, the claim will be viewed as requiring a water-based emulsion having a dispersed particulate polyepoxide. Boon has been newly cited to evidence the known use of such an aqueous emulsion (with polyester cords) prior to the application of an RFL coating.

Lastly, applicant contends that the examples do provide a conclusive showing of unexpected results. However, the examples compare the claimed invention with a method in which conventional adhesive activated yarns are used (yarns treated with adhesive prior to twist). As disclosed above, the method of Boon specifically discloses a method in which the aqueous emulsion is applied after twisting and cabling of the yarns to form a cord (Column 1, Lines 53-54). It is emphasized that this method is expressly disclosed by Boon.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R. Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in cursive script that reads "Justin Fischer".

Justin Fischer

January 10, 2006